

API Standard XD6 Laser Test Data

API XD6 system provides six simultaneous measurements. These include linear displacement, horizontal straightness (XX), vertical straightness (YY), yaw (A), pitch (B), and roll (C).

Linear

Linear measurements are made by recording the distance the machine traveled along the selected axis comparing to the true position the laser recorded.

Horizontal Straightness

The laser system will measure the straightness in two axes orthogonal to the axis of motion.

Pitch and Yaw Measurements

With the laser moving along the X-Axis the 6-D sensor will measure pitch and yaw. Pitch may be described as rotation around the Y-Axis, or rotation in the XZ plane; and yaw as rotation about the Z-Axis, or rotation in the XY plane.

Roll Measurement

With the laser moving along the X-Axis the 6-D sensor will measure roll. Roll may be described as rotation around the X-Axis, or rotation in the YZ plane.

Rotary Measurement

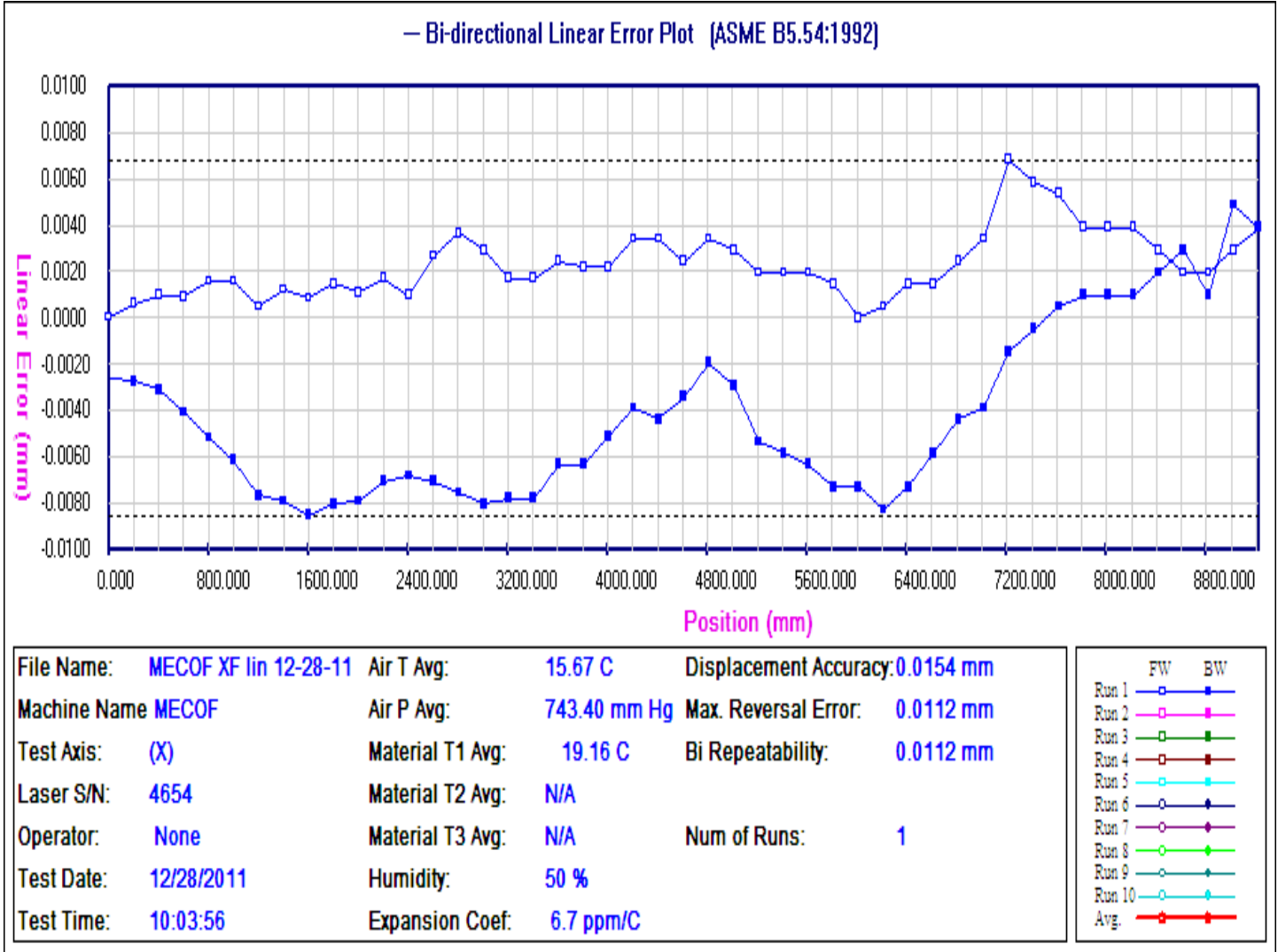
The API system can also measure rotary movement as in the B axis of a machine tool.

The data for the 6 measurements can all in 1 setup and run making it the most efficient system on the market today.

API diagnostic software calculates and produces the following machine performance evaluation.

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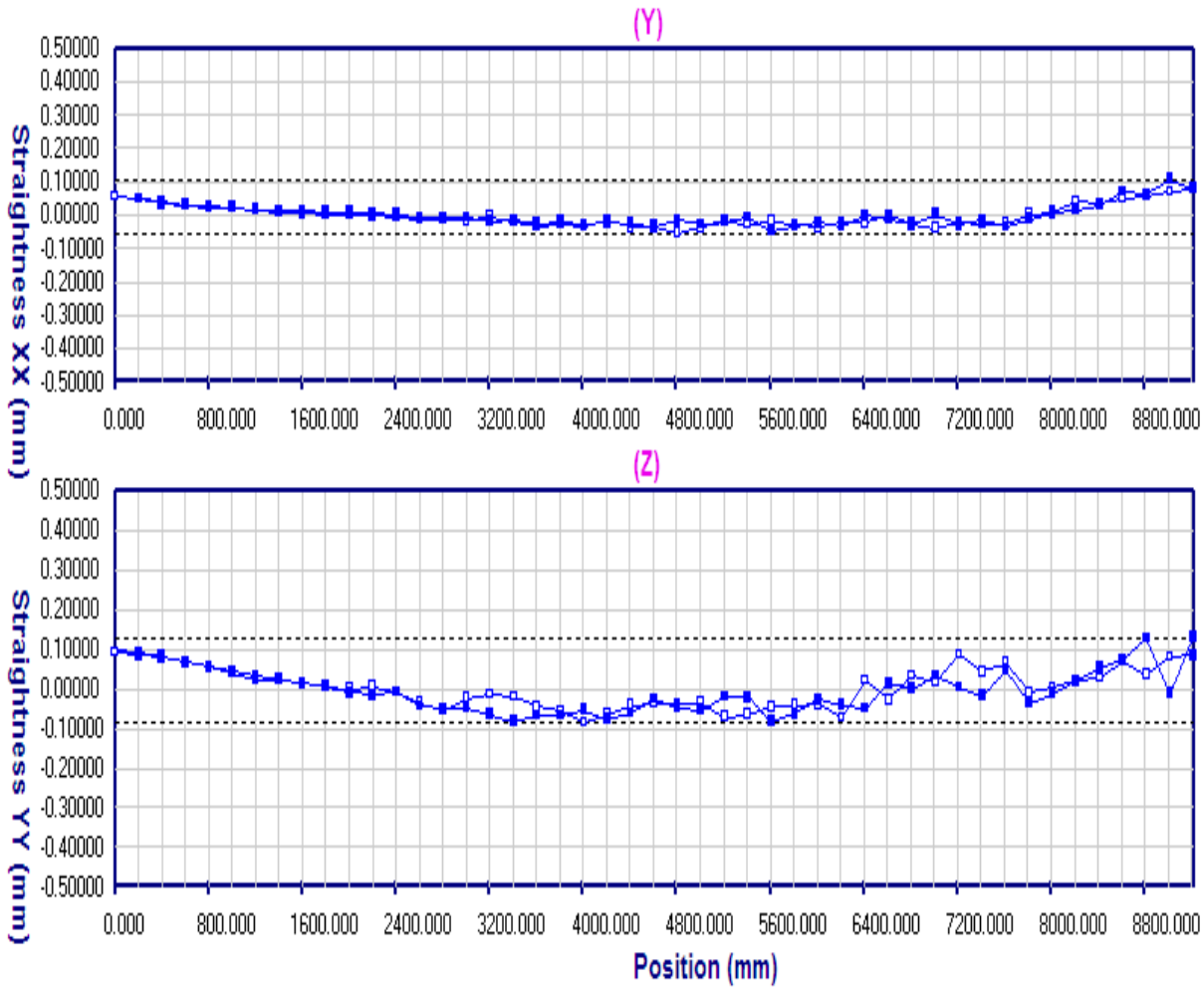
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— Bi-directional Straightness Error Plot

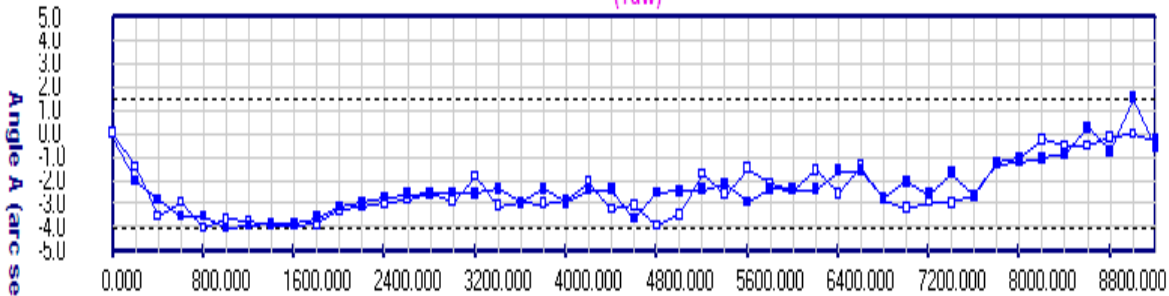


Max XX Err:	0.16065 mm
Max YY Err:	0.21623 mm
Dwell Time (sec):	6 s
File Name:	MECOF X F LIN 12-28-
Machine Name:	MECOF
Operator:	None
Test Axis:	(X)
Test Date:	12/28/2011
Test Time:	BW
R	10:03:56
Run 3	—
Run 4	—
Run 5	—
Run 6	—
Run 7	—
Run 8	—
Run 9	—
Run 10	—
Avg.	—
Mean	—

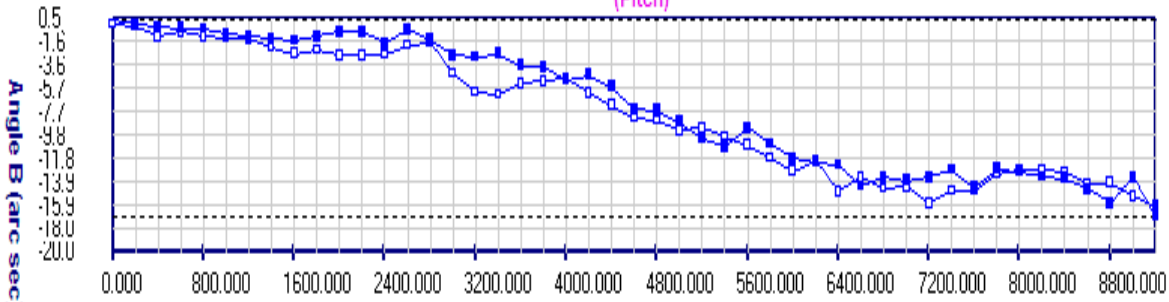
TMS

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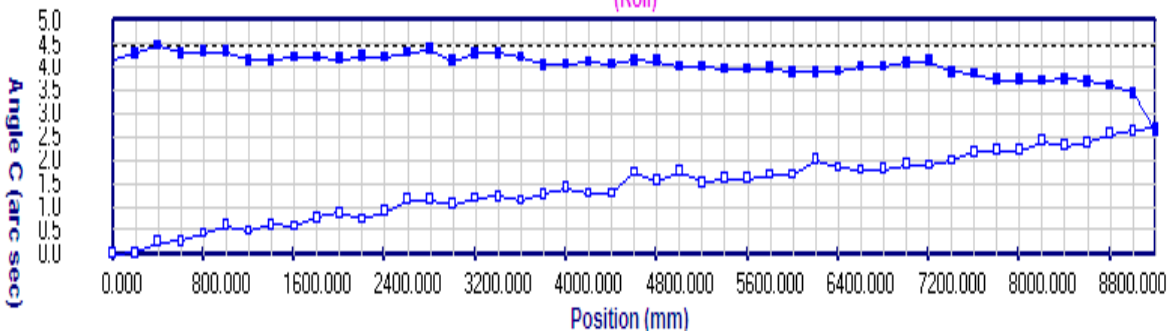
— Bi-directional Angle Error Plot
(Yaw)



(Pitch)



(Roll)

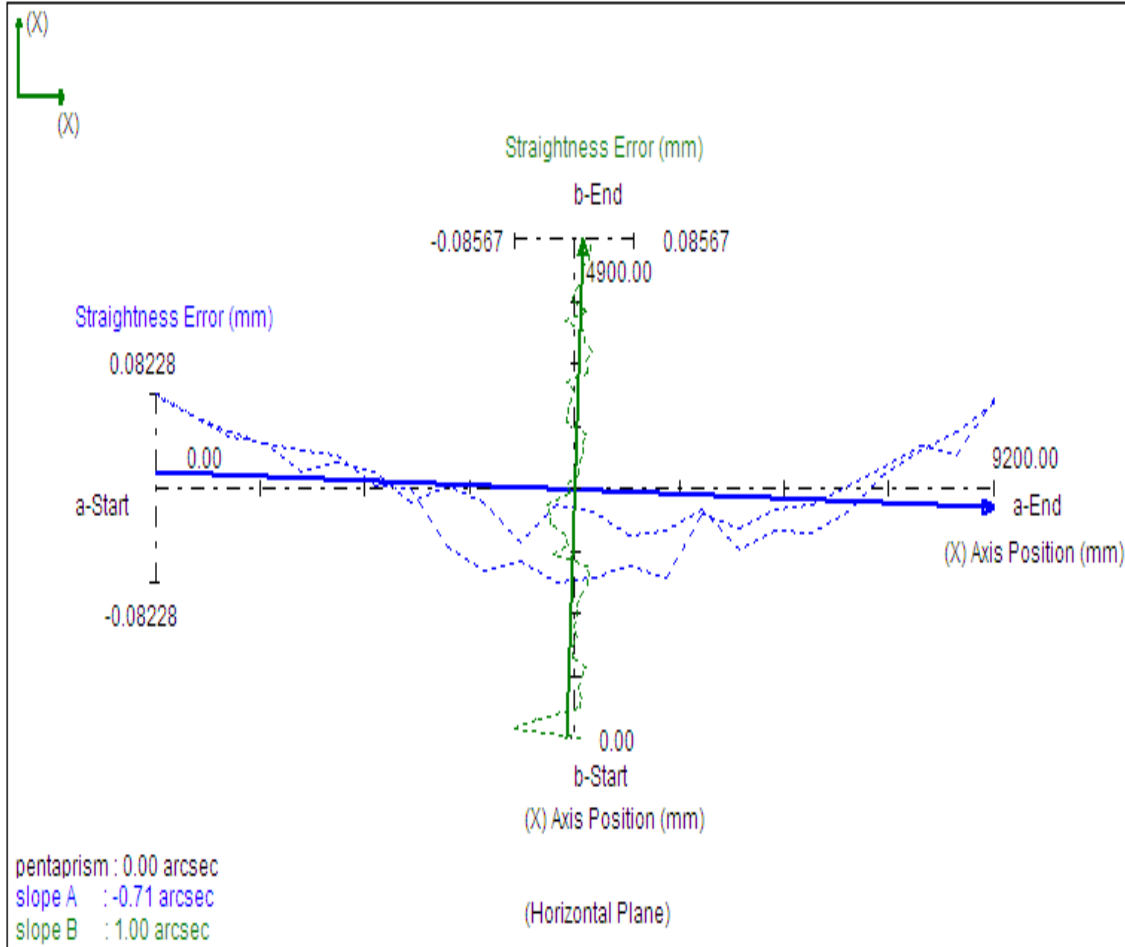


Max Mean AngleA Err:	5.6 arc sec
Max Mean AngleB Err:	17.3 arc sec
Max Mean AngleC Err:	4.4 arc sec
File Name:	MECOF XF.ang
Machine Name:	MECOF
Operator:	None
Test Axis:	(X)
Test Date:	12/28/2011
Test Time:	10:03:FW BW
Run 1	—■—
Run 2	—□—
Run 3	—■—
Run 4	—■—
Run 5	—□—
Run 6	—■—
Run 7	—□—
Run 8	—■—
Run 9	—■—
Run 10	—□—
Avg.	—■—

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Automated Precision, Inc. — Squariness Error Plot



Squareness Error:
-0.3 arc sec
-0.0001 degree
0.00002 in/ft
0.0014 mm/m
File Name:
MECOF XY SQ 12-29-11.st
Machine Name:
MECOF
Axis a <str> File:
MECOF X ST F 12-29-11.st
Axis b <str> File:
MECOF Y ST F 12-29-11.st
Setup:H2
1st Axis: a
2nd Axis: b
Direction:
a: Increase
b: Increase
Pentaprism S/N:
000P00
Test Date:
12/29/2011
Test Time:
09:11:15

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Pitch, Yaw and Roll

